

PNGE 420 PRODUCTION ENGINEERING

Outline

Instructor:	H. Ilkin Bilgesu	
Office:	MER 345C	
Office Hours:	Open door or by appointment	
Class Schedule:	TTh 11:00 a.m. - 12:15 p.m.	
Course Objectives:	To acquaint the students with the techniques, equipment, and engineering design calculations used in oil and natural gas production operations.	
Prerequisites:	PNGE 310 Drilling Engineering and PNGE 332 Petroleum Properties and Phase Behavior.	
Examination Schedule:	Three Mid Term Exams and one Optional Final.	
Grading Policy:	Homework, Quiz and Assignments	20%
	Tests	30%
	Projects and reports	50%
Grades:	90 and above	A
	80-89	B
	70-79	C
	60-69	D
	59 and below	F
Attendance:	Students are expected to attend all scheduled classes.	
Textbook :	- Class Notes (available at the eCampus page for this course) - <u>Production Optimization Using NODAL Analysis</u> , H. Dale Beggs, OGCI, 2 nd Edition (2003) (<i>Optional</i>). - <u>Production Operations-Vol. I and II</u> by T.O. Allen and A.P. Roberts, PennWell, 1994, 4th Edition. (<i>Optional</i>).	
Outcomes:	Upon successful completion of this course the students will be able to: <ul style="list-style-type: none">• Apply basic knowledge of mathematics, science, and engineering in identifying, formulating, and solving engineering problems.• Demonstrate the ability to analyze and interpret data from an oil or gas field.• Design several components for oil and gas production operations.• Use skills, techniques and tools necessary for engineering practice.• Demonstrate the ability to communicate effectively their work by preparing written reports.	

Tentative Course Outline

- Introduction to petroleum production.
- Well completions, effects of reservoir characteristics on well completion design.
- Design of tubing strings, packers and subsurface control equipment
- Evaluation of well performance, productivity index.
- Inflow performance relationship (IPR).
- Multiphase flow and application to horizontal and vertical flow.
- Design and evaluation of flowing and artificial lift oil and gas wells
- Design of artificial lift systems.
- Design and operation of surface facilities
- Production logging tools and analysis techniques
- Workovers

Topics from ABET guidelines:

1. Tubing treatments design
2. Fracture/Acidizing treatments
3. Workover procedures (Squeeze cementing and recompletion)
4. Nodal analysis
5. Artificial lift equipment
6. Surface equipment
7. Production logging

UNIVERSITY/COLLEGE POLICIES:

IMPORTANT: Where a conflict arises between the Policies and Expectations of this course with those of the University, the University Policies will supersede these course level practices.

Social Justice Statement:

“The West Virginia University is committed to creating and fostering a positive learning and working environment based on open communication, mutual respect, and inclusion.

If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me and make appropriate arrangements with the Office of Accessibility Services (304-293-6700). For more information on West Virginia University’s Diversity, Equity, and Inclusion initiatives, please see <http://diversity.wvu.edu>.”

Academic Integrity Statement:

The integrity of the classes offered by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. Therefore, I will enforce rigorous standards of academic integrity in all aspects and assignments of this course. For the detailed policy of West Virginia University regarding the definitions of acts considered to fall under academic dishonesty and possible ensuing sanctions, please see the Student Conduct Code at <http://studentlife.wvu.edu/studentconductcode.html>. Should you have any questions about possibly improper research citations or references, or any other activity that may be interpreted as an attempt at academic dishonesty, please see me before the assignment is due to discuss the matter.

Emergencies:

In the case of an emergency such as fire alarm, please evacuate the building and gather at least 100 yards away from the building. DO NOT return to the building until the emergency is over and it is cleared by the fire marshal or police.